



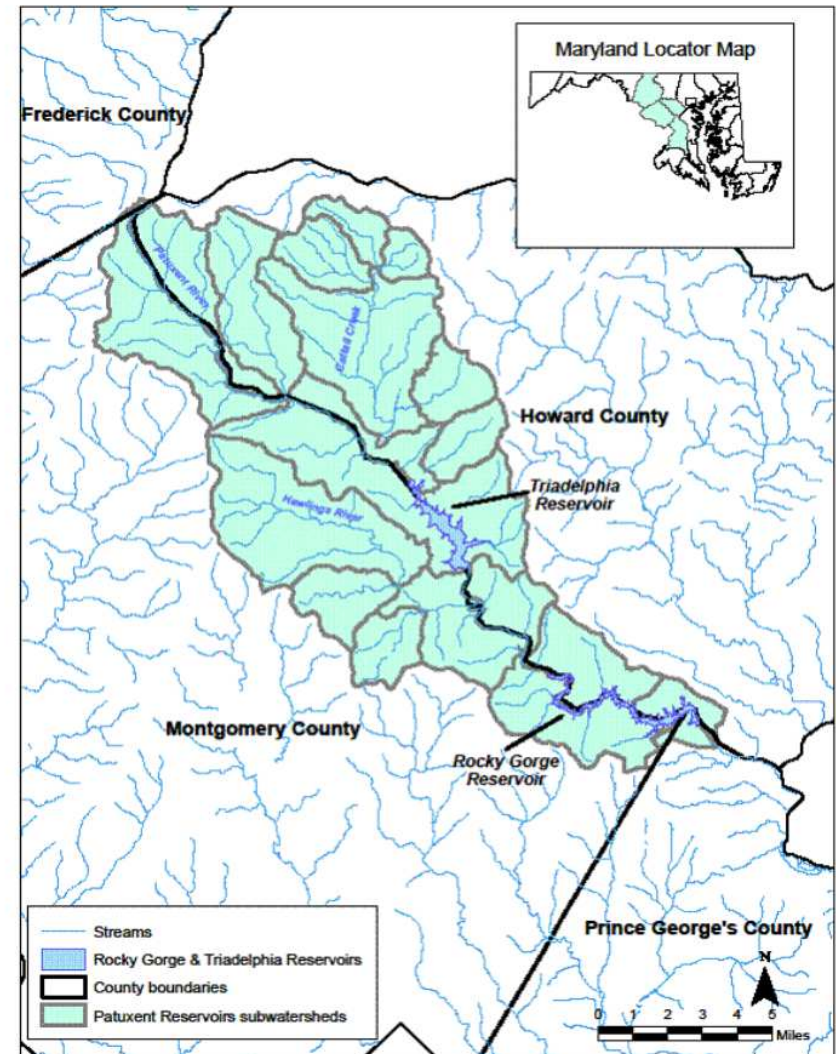
WSSC Patuxent Reservoirs Water Quality Monitoring Program

MD Streams Roundtable

19 February 2016

Outline

- Reservoir facts and figures
- Drinking water requirements
- Monitoring program protocols
- Looking ahead to 2016

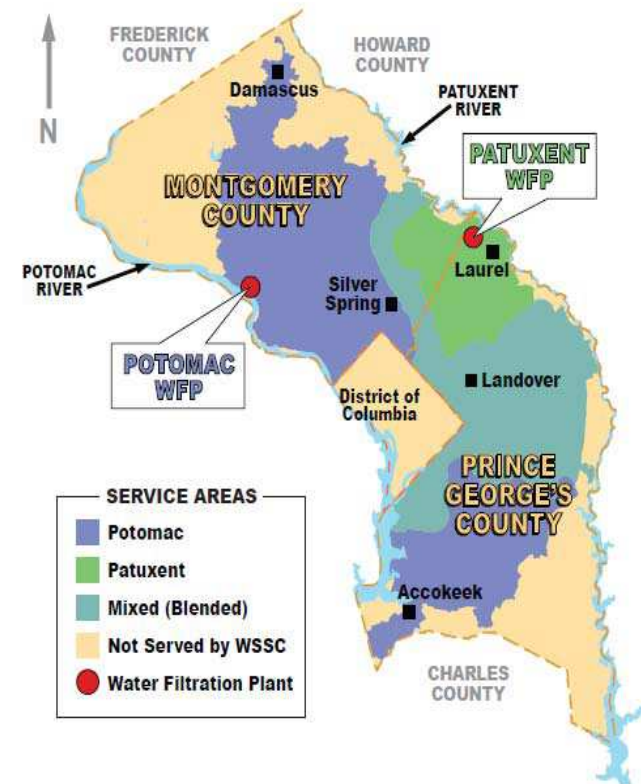


Reservoir Facts & Figures

	Triadelphia	Rocky Gorge
Constr. / In service	1942 / 1944	1952 / 1954
Capacity (billion gal.)	6.66 (2004)	5.54 (2005)
Surface area (acres)	824	618
Normal depth (feet)	52	74
Mean pool elev. (feet)	366.4	286.4



- Reservoirs Supply $\approx 1/3$ of WSSC customers (650,000)



Drinking Water Quality

DW Treatment Challenges

- Pathogens
- TOC – disinfection by-products
- Pesticides and organics
- Emerging contaminants
- Taste and odor – algal blooms
- Fe, Mn – seasonally discolored water
- Sodium chloride – seasonal, long term



Monitoring Program Protocols

Objectives

- Water Quality Status & Trends
- Provide info to optimize treatment and reduce \$
- Measure TMDL Implementation Progress

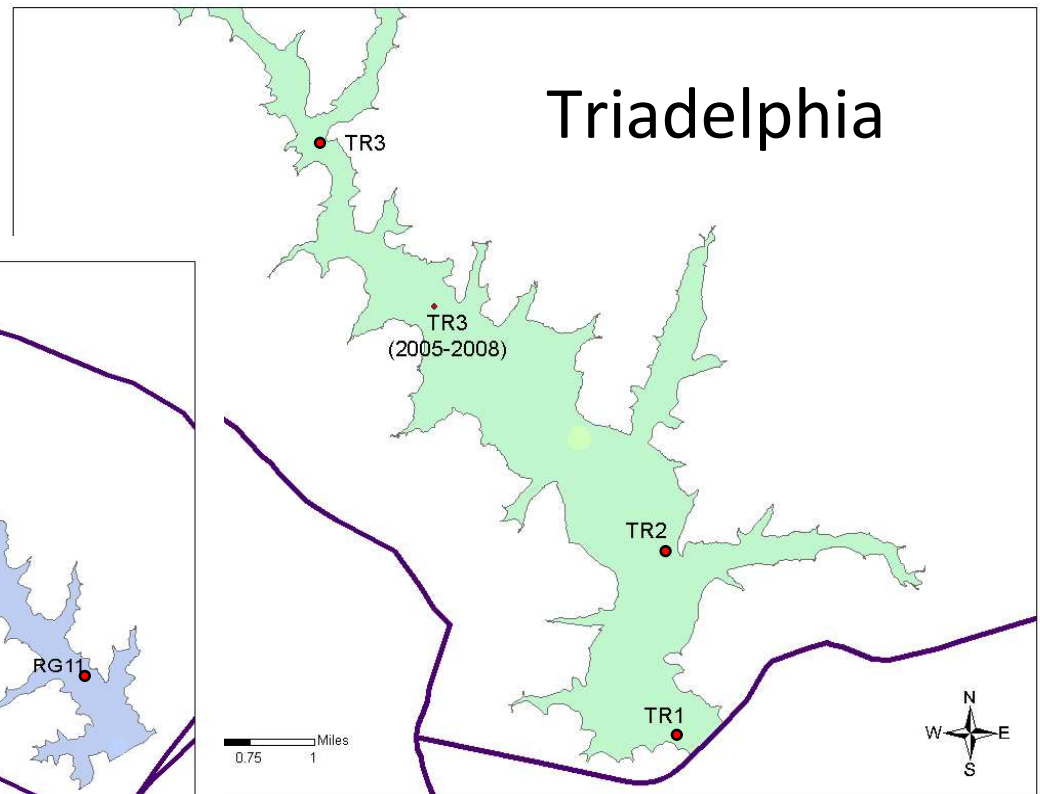
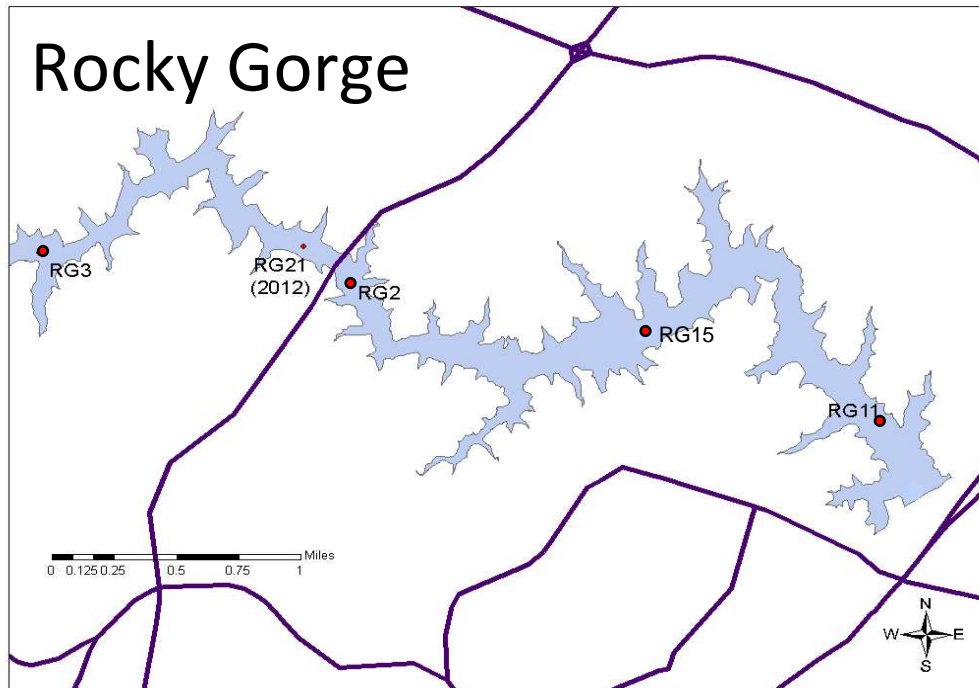
Sampling Season: March-November
Lab Analyzes Grab Samples Monthly
Measure WQ bi-weekly in summer
Monitoring Plan (2012)



PATUXENT RESERVOIRS WATER QUALITY MONITORING PLAN

Prepared by:
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Monitoring Station Locations

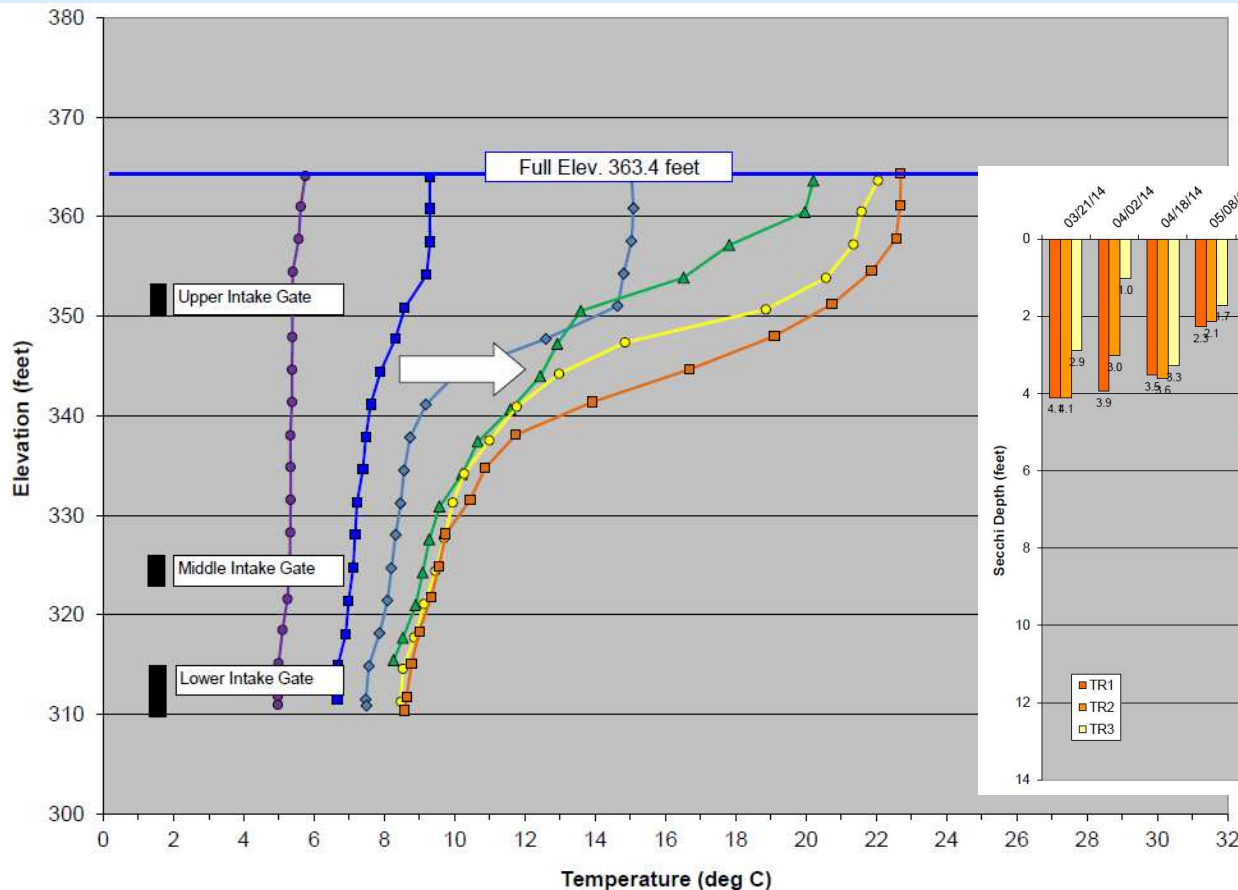


Field Monitoring Equipment

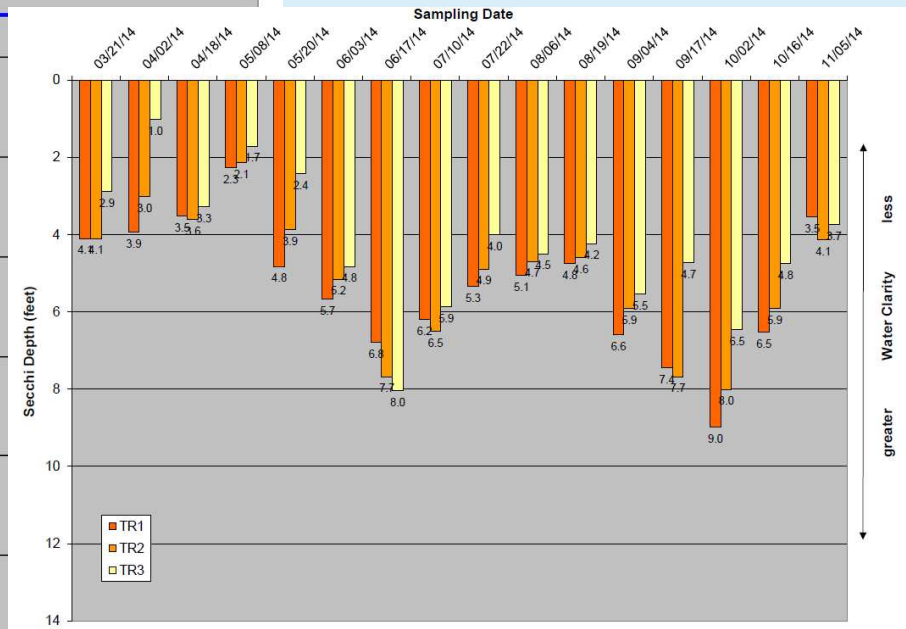


Water Quality Parameters

- Profiles through the water column (Depth, DO, pH, Temperature, ORP, Conductance/TDS)

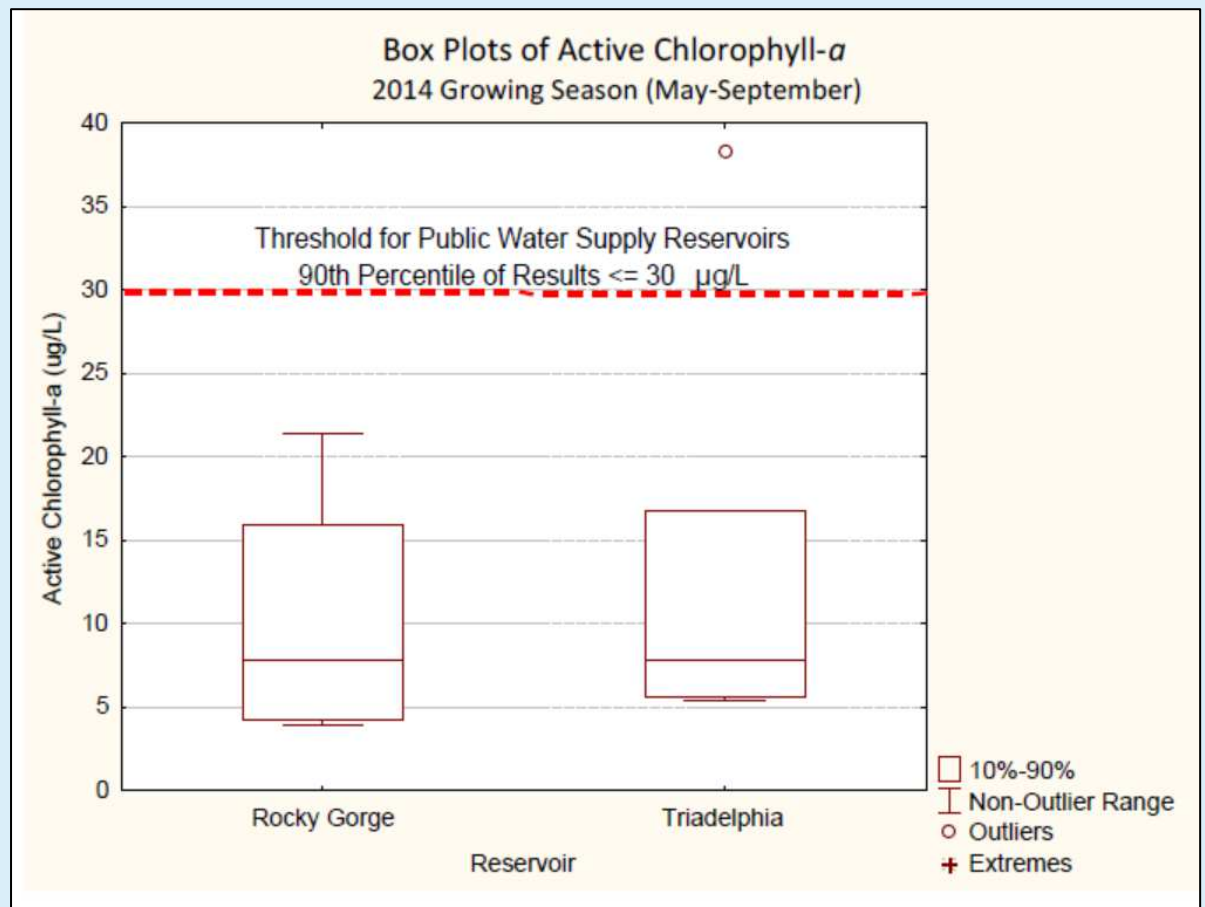


- Clarity (Secchi)

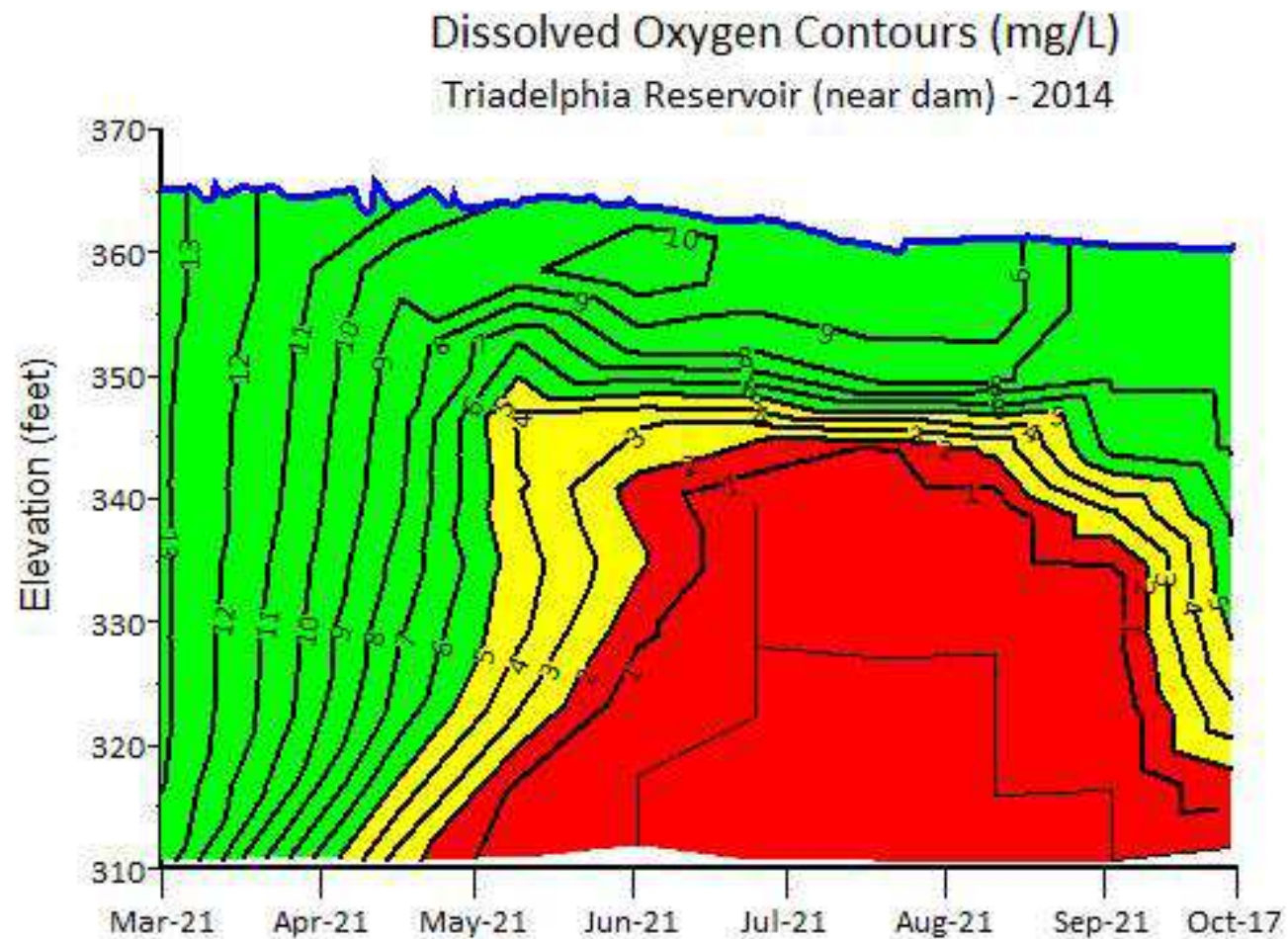


Water Quality Parameters

- Laboratory analyses (grab samples, composites)
 - Chlorophyll a
 - Nutrients:
 - Ammonia, TKN, NO₂+NO₃
 - Total Phosphorus
 - TOC, alkalinity, color, turbidity
 - Sodium and Chloride
 - Previously: VOCs, pesticides, fecal bacteria, Fe + Mn



Seasonally Stratified Dissolved Oxygen



Looking Forward

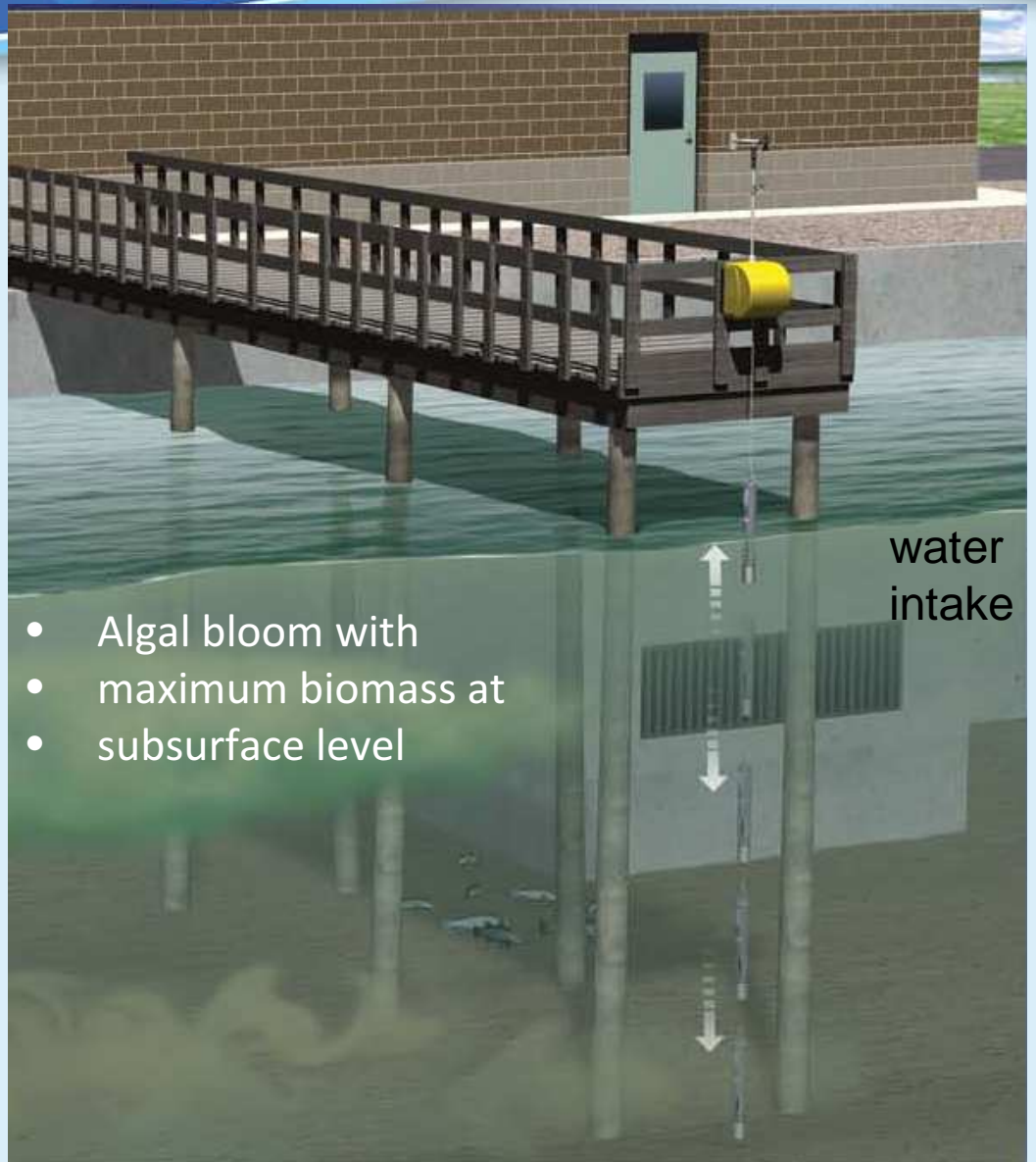
- Automated vertical profilers (2016)
- Harmful algal blooms (monitoring 2015+)
- Tributary monitoring (future)
 - Nutrient loads
 - TMDL tracking

Automated Vertical Profiler

Capabilities

1. Algal blooms (Chl-a sensor)
2. Cyanobacteria (Phycocyanin sensor)
3. Dissolved organic matter
4. Seasonal turnover

Adjust treatment processes based on early detection of deteriorating water quality conditions



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Point to “**Water Quality**” and/or

“**Environmental Stewardship**” for further details

